

**WHAT IS CLAIMED IS:**  
**(US)**

1. A surface texture measuring machine for measuring a surface texture of a workpiece held on a workpiece orientation adjustment stage, the workpiece having an edge line and being movable in a measurement direction (X-axis direction) and in a direction (Y-axis direction) orthogonal with the X-axis direction within a horizontal plane and rotatable in a X-Y plane, the workpiece being capable of seesawing in a direction (Z-axis direction) orthogonal with the X-axis direction within a perpendicular plane, the surface texture of the workpiece being scanned by a sensor movable in the X-axis direction after adjusting orientation of the workpiece, the surface texture measuring machine comprising:

5            a measurement controller for adjusting the orientation of the workpiece; and

10          a measurement means being controlled by the measurement controller,

15          the measurement controller comprising: a surface texture measurement controller for measuring the surface texture of the workpiece; a X-axis coordinates input means for inputting X-axis coordinates at a measurement start point and a measurement end point in adjusting the orientation of the workpiece; a Y-axis coordinates input means for inputting Y-axis coordinates at a measurement start point and a measurement end point in adjusting the orientation of the workpiece; a swivel correction angle calculation means for calculating a swivel inclination angle (an inclination angle within the X-Y plane relative to X-axis) and a swivel correction angle from the X-axis coordinates inputted by the X-axis coordinates input means and the Y-axis coordinates inputted by the Y-axis coordinate input means; and a swivel correction angle display for displaying the swivel correction angle calculated by the swivel correction angle calculation means,

20          the measurement means comprising: a Y-axis adjustment means for adjusting orientation of the workpiece by manually displacing the workpiece in the Y-axis direction in accordance with the swivel correction angle displayed on the swivel correction angle display; and a swivel adjustment means for manually rotating the workpiece within the X-Y plane to adjust orientation thereof.

25          the measurement means comprising: a Y-axis adjustment means for adjusting orientation of the workpiece by manually displacing the workpiece in the Y-axis direction in accordance with the swivel correction angle displayed on the swivel correction angle display; and a swivel adjustment means for manually rotating the workpiece within the X-Y plane to adjust orientation thereof.

30          The surface texture measuring machine according to Claim 1, the

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measurement controller further comprising: a Z-axis coordinates input means for inputting Z-axis coordinates of the workpiece at the measurement start point and the measurement end point in adjusting orientation of the workpiece; an inclination correction calculation means for calculating an inclination angle within a X-Z plane and an inclination correction amount from the X-axis coordinates and the Z-axis coordinates inputted by the Z-axis coordinates input means; and an inclination correction display for displaying inclination correction amount calculated by the inclination correction calculation means,

10 the measurement means further comprising an inclination adjustment means for manually displacing the workpiece in Z-axis direction in accordance with the inclination correction amount calculated by the inclination correction calculation means for adjusting orientation thereof.

*Sub 15 Q8.)* The surface texture measuring machine according to Claims 1, wherein the Y-axis adjustment means, the swivel adjustment means and the inclination adjustment means respectively include a micrometer head.

20 4. An orientation adjusting method of a workpiece using a surface texture measuring machine, the workpiece having an edge line and being movable in a measurement direction (X-axis direction) and in a direction (Y-axis direction) orthogonal with the X-axis direction within a horizontal plane and rotatable in a X-Y plane, the workpiece being capable of seesawing in a direction (Z-axis direction) orthogonal with the X-axis direction within a perpendicular plane, the surface texture of the workpiece being scanned by a sensor movable in the X-axis direction after adjusting orientation of the workpiece, the orientation adjusting method comprising the steps of:

25 30 measuring positions of the workpiece relative to the sensor at a measuring start point and a measurement end point;

calculating orientation of the workpiece from the positions to obtain an orientation correction amount;

35 displaying or printing the orientation correction amount; and operating an adjustment means of the workpiece orientation adjustment stage to correct the orientation of the workpiece.

5. The orientation-adjusting method according to Claim 4, wherein the

position of the workpiece at the measurement start point and the position of the workpiece at the measurement end point are detected as a maximum value or a minimum value of Z-axis coordinates within Y-Z plane.

5. 6. The orientation-adjusting method according to Claim 4, wherein the orientation of the workpiece is conducted by rotating the workpiece on the X-Y plane relative to the sensor.

10 7. The orientation-adjusting method according to Claim 4, wherein the orientation of the workpiece is adjusted by seesawing the workpiece on the X-Z plane relative to the sensor.

15 8. An leveling device for a surface texture measuring machine, the surface texture measuring machine comprising: a displacement detecting means movable in a measurement direction (X-axis direction) for measuring displacement on a surface of a workpiece; and a moving means for moving the displacement detecting means in the measurement direction to scan a displacement signal from the displacement detecting means, the surface texture measuring machine adjusting an amount of the workpiece relative to a base line as a movement locus of the displacement detecting means, the leveling device comprising:

20 a fulcrum during measurement and adjustment and a point of action working relative to the fulcrum;

25 a manipulated valuable calculation means for scanning the surface of the workpiece by the displacement detecting means and for calculating a center locus of measurement data based on a displacement signal from the displacement detecting means to calculate a operation amount at the point of action relative to the fulcrum required for paralleling the center locus with the base line of the moving means;

30 an output means for displaying, printing or outputting as data the operation amount; and

an inclination adjustment means for manually adjusting inclination of a predetermined amount.

35 9. The leveling device according to Claim 8, wherein the operation amount is calculated from an inclination reference position where an inclination line connecting the fulcrum and the point of action of the

inclination adjustment means is parallel with the base line of the moving means.

5 10. The leveling device according to Claim 8, wherein the inclination adjustment means includes a micrometer head.

10 11. The leveling device according to Claim 8, wherein the operation amount includes operation amount at any two points on the inclination adjustment means conducting three-point support.

12. The leveling device according to Claim 8, further comprising any one of the workpiece and the moving means.